

## Word Problems with Systems

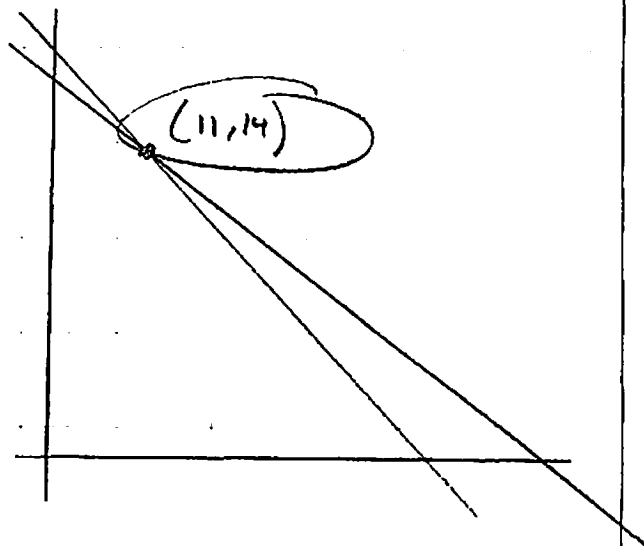
Instructions: Identify your variables, write a system, and then solve it three ways.

p. 336/43

Identify variables:

Let  $x$  be # of single recording tapesLet  $y$  be # of concert tapes

Graphically:



System:

$$\begin{cases} x + y = 25 \\ 6.99x + 10.99y = 230.75 \end{cases}$$

Elimination:

$$\begin{array}{r} -6.99x - 6.99y = 25(-6.99) \\ 6.99x + 10.99y = 230.75 \\ \hline \end{array}$$

$$\begin{array}{r} 4y = 56 \\ \div 4 \quad \div 4 \\ \hline \end{array}$$

$$y = 14$$

$$\begin{array}{r} x + 14 = 25 \\ \div 14 \quad \div 14 \\ \hline \end{array}$$

$$x = 11$$

11 single recording tapes
14 concert tapes

Substitution:

$$\begin{array}{r} x + y = 25 \\ -y \quad -y \\ \hline \end{array}$$

$$x = 25 - y$$

$$\begin{array}{r} 6.99(25 - y) + 10.99y = 230.75 \\ \times 100 \qquad \qquad \times 100 \\ \hline \end{array}$$

$$699(25 - y) + 1099y = 23075$$

$$17475 - 699y + 1099y = 23075$$

$$400y + 17475 = 23075$$

$$\begin{array}{r} 400y = 5600 \\ \div 400 \quad \div 400 \\ \hline \end{array}$$

$$y = 14$$

$$x = 25 - 14$$

$$x = 11$$

p. 336/48

Identify variables:

Let  $x$  be pounds of seeds

Let  $y$  be pounds of nuts

System:

$$\begin{cases} 0.2x + 0.3y = 11 \\ x + y = 42 \end{cases}$$

Elimination:

$$-5(0.2x + 0.3y) = (11)^{-5}$$

$$-x - 1.5y = -55$$

$$x + y = 42$$

$$\begin{array}{r} -0.5y = -13 \\ \times 2 \quad \times 2 \end{array}$$

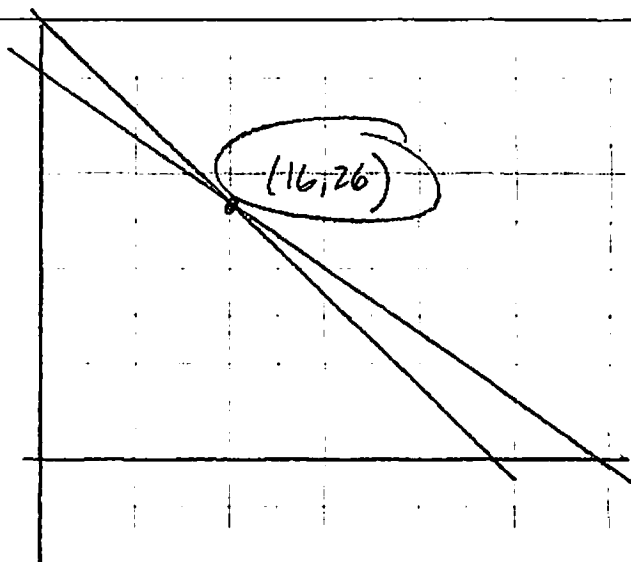
$$y = 26$$

$$x + 26 = 42$$

$$x = 16$$

16 oz of seeds  
26 oz. of nuts

Graphically:



Substitution:

$$x + y = 42$$

$$\begin{array}{r} -x \quad -y \\ \hline \end{array}$$

$$x = 42 - y$$

$$0.2(42 - y) + 0.3y = 11$$

$$8.4 - 0.2y + 0.3y = 11$$

$$0.1y + 8.4 = 11$$

$$\times 10$$

$$\times 10$$

$$\begin{array}{r} y + 8.4 = 110 \\ -8.4 \quad -8.4 \\ \hline \end{array}$$

$$y = 26$$

$$x = 42 - 26$$

$$x = 16$$